

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-14, 28 and 30-33 are pending, of which claims 1-14, 28, and 30 have been amended. Claim 29 has been canceled. No claims have been added. Support for the amendments can be found at least at pages 8-10 and Figs. 1-4 of the Application as filed.

35 U.S.C. §101 Claim Rejections

Claims 28-33 are rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter (*Office Action*, p.3 ¶8). The Office indicates that the claims do not appear to produce a useful and tangible result to form the basis of a practical application needed to be statutory (*Office Action*, p.4 ¶1).

Claim 28 has been amended and now recites “[a] method of testing an in-test host’s support of USB peripherals, comprising” and “determining whether the in-test host supports proper operation of the emulated USB devices based on the USB response messages”. Determining whether the in-test host supports proper operation of the emulated USB devices based on the USB response messages is a useful and tangible result which clearly satisfies the statutory requirements of 35 U.S.C. §101. This and other useful results are described in detail throughout the Specification (*e.g.*, *Specification*, p. 3 lns.21-24).

Accordingly, for at least the reasons described above, Applicant respectfully requests that the §101 rejection of claim 28 be withdrawn.

1 **Claims 30-33** depend from claim 28, and therefore the §101 rejection of
2 claims 30-33 should be withdrawn for at least the reasons described above
3 response to the §101 rejection of claim 28.

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5 **35 U.S.C. §103 Claim Rejections**

6 **A.** Claims 1-2, 4, 11-12, 28, and 31 are rejected under
7 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,636,929 to Frantz et al.
8 (*hereinafter*, “Frantz”) in view of an IBM Technical Disclosure entitled “Multiple
9 Control Unit/Device Emulator for Testing Computer Programs” (*hereinafter*,
10 “IBM Technical”) and further in view of U.S. Patent No. 6,389,029 to McAlear
11 (*hereinafter*, “McAlear”) (*Office Action* pp. 4-5 and 22). Applicant respectfully
12 traverses the rejection.

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14 **B.** Claims 3, 5, and 9-10 are rejected under 35 U.S.C. §103(a) as being
15 obvious over Frantz and IBM Technical in view of McAlear, further in view of a
16 document “Universal Serial Bus (USB) Device Class Definition for Human
17 Interface Devices (HID), Version 1.11, June 21, 2001)” (*hereinafter*, “UsbHid”),
18 and further in view of a document “Universal Serial Bus Specification, Rev. 1.1,
19 September 23, 1998” (*hereinafter*, “UsbSpecs”) (*Office Action* p.10). Applicant
20 respectfully traverses the rejection.

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22 **C.** Claims 6-7 and 30 are rejected under 35 U.S.C. §103(a) as being
23 obvious over Frantz and IBM Technical in view of McAlear, and further in view
24 of a document entitled “Code Complete, A Practical Handbook of Software
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1 Construction” by Steven McConnell (*hereinafter*, “McConnell”) (*Office Action* p.
2 14). Applicant respectfully traverses the rejection.

3 D. Claim 8 is rejected under 35 U.S.C. §103(a) as being obvious over
4 Frantz and IBM Technical in view of McAlear, further in view of UsbSpecs, and
5 further in view of a document entitled “Computer Networks Third Edition” by
6 Tanenbaum (*hereinafter*, “Tanenbaum”) (*Office Action* p.17). Applicant
7 respectfully traverses the rejection.

8 E. Claims 13 and 14 are rejected under 35 U.S.C. §103(a) as being
9 obvious over Frantz and IBM Technical in view of McAlear, and further in view
10 of Tanenbaum (*Office Action* pp. 28 and 36). Applicant respectfully traverses the
11 rejection.
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13 F. Claims 32 and 33 are rejected under 35 U.S.C. §103(a) as being
14 obvious over Frantz and IBM Technical in view of McAlear, and further in view
15 of Tanenbaum (*Office Action* p. 29). Applicant respectfully traverses the rejection.
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1 Claim 1 recites in part:

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3 A testing interface device for testing an in-test host's support of USB
4 peripherals, the testing interface device comprising:...operating
5 logic configured to perform actions comprising:...maintaining a
6 correspondence between the emulated USB peripheral devices and
7 the logical network ports of the testing interface device, such that
8 upon receiving a USB command message from the in-test host using
9 a USB protocol and corresponding to a particular emulated USB
10 peripheral device, the testing interface device sends the USB
11 command message to the peripheral emulator via one of the logical
12 network ports which corresponds to the particular emulated USB
13 device, and such that when receiving a USB response message from
14 the peripheral emulator using the network communications protocol
15 and corresponding to the particular emulated USB peripheral device,
16 the testing interface device receives the USB response message via
17 the logical network port which corresponds to the particular
18 emulated USB device.

19 Frantz and/or IBM Technical and/or McAlear do not teach or suggest the
20 combination of features recited in claim 1. For example, Frantz and/or IBM
21 Technical and/or McAlear do not teach or suggest a testing interface device which
22 includes operating logic for maintaining a correspondence between the emulated
23 USB peripheral devices and the logical network ports of the testing interface
24 device, as recited in claim 1. More specifically, Frantz and/or IBM Technical
25 and/or McAlear do not teach or suggest a testing interface device which includes
operating logic configured to perform actions including maintaining a
correspondence between the emulated USB peripheral devices and the logical
network ports of the testing interface device, such that upon receiving a USB
command message from the in-test host using a USB protocol and corresponding
to a particular emulated USB peripheral device, the testing interface device sends

1 the USB command message to the peripheral emulator via one of the logical
2 network ports which corresponds to the particular emulated USB device, and such
3 that when receiving a USB response message from the peripheral emulator using
4 the network communications protocol and corresponding to the particular
5 emulated USB peripheral device, the testing interface device receives the USB
6 response message via the logical network port which corresponds to the particular
7 emulated USB device, as recited in claim 1.

8 Frantz describes a system for managing a personal computer or server (*i.e.*,
9 the managed computer) using a management console that is remotely located from
10 the managed computer (*Frantz*, col.1, lines 34-37). A user at the management
11 console can use the actual peripheral devices located at the remote management
12 console to interact with the remote management console, and send data to a
13 management subsystem (*Frantz*, col.3 line 65 to col.4 line 47; col.7 lines 45-52).
14 The management subsystem of Frantz is connected to the managed computer via a
15 USB bus which can be provided integrally on the system board of the managed
16 computer, or can be provided as a plug-in board which connects to the system bus
17 of the managed computer (*Frantz*, col.11, lines 22-27). A USB device emulator is
18 located on the management subsystem, and mimics the operation of the actual
19 peripherals which are available at the remote management console (*Frantz*, col.12,
20 line 65 to col.13, line 15).

21 However, Frantz does not teach or suggest a testing interface device
22 including operating logic for maintaining the correspondence between the
23 emulated USB peripheral devices and the logical network ports of the testing
24 interface device as recited in claim 1. Instead, Frantz describes a system for
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1 managing a personal computer (or server) using actual peripheral devices which
2 are connected to a management console that is remotely located from the managed
3 computer (*Frantz*, col.1, lines 34-37). Such managing is presumably done
4 subsequently to any testing, and as such the management subsystem of *Frantz* is
5 clearly not a testing interface device, as recited in claim 1. With regard to
6 operating logic, *Frantz* describes that in a preferred embodiment, the actual
7 peripheral devices at the remote console are predetermined and that the
8 management subsystem is programmed with this information (*Frantz*, col.11, lns.
9 14-17).

10 Accordingly, *Frantz* does not teach or suggest a testing interface device
11 including operating logic for maintaining the correspondence between the
12 emulated USB peripheral devices and the logical network ports of the testing
13 interface device, as recited in claim 1. The Office has not cited to *Frantz* as
14 disclosing operating logic for maintaining the correspondence between the
15 emulated USB peripheral devices and the logical network ports of the testing
16 interface device as recited in claim 1.

17 IBM Technical describes a micro-program "for converting a small central
18 processing unit into a device for emulating multiple input/output devices and
19 associated control units" (*IBM Technical*, lines 1-2). According to IBM
20 Technical, "such an emulation capability allows the emulator to be attached to a
21 central processing system for testing the system itself, and for testing computer
22 programs for the system without the necessity of physically attaching the
23 input/output devices and employing people to operate those devices," and
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1 “provides the capability for testing programs which drive currently unavailable
2 devices.” (*IBM Technical*, lns. 1-7).

3 However, *IBM Technical* fails to cure the deficiencies of *Frantz*, as it does
4 not teach or suggest a testing interface device including operating logic for
5 maintaining the correspondence between the emulated USB peripheral devices and
6 the logical network ports of the testing interface device as recited in claim 1. The
7 Office has not cited to *IBM Technical* as disclosing such.

8 McAlear describes a local area network which incorporates the universal
9 serial bus (USB) protocol (*McAlear*, Title). According to McAlear, a plurality of
10 USB devices and/or LAN computers can be connected to a plurality of outer hub
11 devices via a respective plurality of USB link, and the outer end hubs can
12 communicate with the USB devices and LAN computers using the USB protocol
13 (*McAlear*, Abstract). McAlear describes sending USB command messages and
14 USB response messages through a network interface using a network
15 communications protocol (*McAlear*, Figs. 7A-B and col. 24 lns. 25-55).

16 However, McAlear fails to cure the deficiencies of *Frantz* and/or *IBM*
17 *Technical*, as it does not teach or suggest a testing interface device including
18 operating logic for maintaining the correspondence between the emulated USB
19 peripheral devices and the logical network ports of the testing interface device as
20 recited in claim 1. The Office has not cited to McAlear as disclosing such.

21 None of these cited references describe operating logic for maintaining the
22 correspondence between the emulated USB peripheral devices and the logical
23 network ports of the testing interface device as recited in claim 1. At most, the
24 references describe that USB devices are typically accessed by USB addresses
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1 which are assigned when the USB devices are attached and enumerated.
2 Accordingly, claim 1 is allowable over the Frantz, IBM Technical, McAlear
3 combination for at least the reasons described above, and Applicant respectfully
4 requests that the §103 rejection be withdrawn.

5 **Claims 2-14** are allowable by virtue of their dependency upon claim 1, and
6 are allowable over Frantz, IBM Technical, McAlear combination for the reasons
7 described above in the response to the rejection of claim 1. Additionally, any one
8 of claims 2, 4, and 11-12 may be allowable over the Frantz, IBM Technical,
9 McAlear combination for independent reasons. Accordingly, the §103 rejection
10 should be withdrawn.

11 **Claims 3, 5, and 9-10** are also allowable over the Frantz, IBM Technical,
12 McAlear, UsbHid, and UsbSpecs combination because UsbHid and UsbSpecs do
13 not address the deficiencies of the Frantz, IBM Technical, McAlear combination
14 as described above in response to the rejection of claim 1. Accordingly, the §103
15 rejection should be withdrawn.

16 **Claims 6-7** are also allowable over the Frantz, IBM Technical, McAlear,
17 and McConnell combination because McConnell does not address the deficiencies
18 of the Frantz, IBM Technical, McAlear combination as described above in
19 response to the rejection of claim 1. Accordingly, the §103 rejection should be
20 withdrawn.

21 **Claim 8** is also allowable over the Frantz, IBM Technical, McAlear,
22 UsbSpecs, and Tanenbaum combination because UsbSpecs and Tanenbaum do not
23 address the deficiencies of the Frantz, IBM Technical, McAlear combination as
24 described above in response to the rejection of claim 1. Accordingly, the §103
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1 rejection should be withdrawn. Additionally, claim 8 is allowable over the Frantz,
2 IBM Technical, McAlear, UsbSpecs, and Tanenbaum combination for
3 independent reasons. For example:

4 Claim 8 recites a test system as recited in claim 1, wherein: the operating
5 logic is further configured to “automatically send acknowledgment messages from
6 the testing interface device to the in-test host while waiting to receive the USB
7 response messages from the peripheral emulator”. None of the cited references
8 teach or suggest operating logic configured to automatically send acknowledgment
9 messages from the testing interface device to the in-test host while waiting to
10 receive the USB response messages from the peripheral emulator, as recited in
11 claim 8.

12 **Claims 13-14** are also allowable over the Frantz, IBM Technical, McAlear,
13 and Tanenbaum combination because Tanenbaum does not address the
14 deficiencies of the Frantz, IBM Technical, McAlear combination as described
15 above in response to the rejection of claim 1. Accordingly, the §103 rejection
16 should be withdrawn.

Claim 28 recites in part a method of testing an in-test host's support of USB peripherals, the method comprising:

determining whether the in-test host supports proper operation of the emulated USB devices based on the USB response messages; and

maintaining a correspondence between the emulated USB peripheral devices and the logical network ports of the testing interface device, such that upon receiving a USB command message from the in-test host using a USB protocol and corresponding to a particular emulated USB peripheral device, the testing interface device sends the USB command message to the peripheral emulator via one of the logical network ports which corresponds to the particular emulated USB device, and such that when receiving a USB response message from the peripheral emulator using the network communications protocol and corresponding to the particular emulated USB peripheral device, the testing interface device receives the USB response message via the logical network port which corresponds to the particular emulated USB device.

As described above in response to the rejection of claim 1, Frantz and/or IBM Technical and/or McAlear do not teach or suggest the combination of features recited in claim 28. For example, Frantz and/or IBM Technical and/or McAlear do not teach or suggest operating logic configured to maintain a correspondence between the one or more emulated USB peripheral devices and the logical network ports of the testing interface device as recited in claim 28.

Accordingly, claim 28 is allowable over the Frantz, IBM Technical, McAlear combination for at least the reasons described above in response to the rejection of claim 1, and Applicant respectfully request that the §103 rejection be withdrawn.

1 **Claims 30-33** are allowable by virtue of their dependency upon claim 28,
2 and are allowable over Frantz, IBM Technical, McAlear combination for the
3 reasons described above in the response to the rejection of claim 28. Additionally,
4 any one of claims 30-33 may be allowable over the Frantz, IBM Technical,
5 McAlear combination for independent reasons. Accordingly, the §103 rejection
6 should be withdrawn.

7 **Claim 30** is also allowable over the Frantz, IBM Technical, McAlear, and
8 McConnell combination because McConnell does not address the deficiencies of
9 the Frantz, IBM Technical, McAlear combination as described above in response
10 to the rejection of claim 28. Accordingly, the §103 rejection should be withdrawn.

11 **Claims 32-33** are also allowable over the Frantz, IBM Technical, McAlear,
12 and Tanenbaum combination because Tanenbaum does not address the
13 deficiencies of the Frantz, IBM Technical, McAlear combination as described
14 above in response to the rejection of claim 28. Accordingly, the §103 rejection
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Respectfully Submitted,

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